WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

ROUTE DEVELOPMENT PLAN

SR-539

Kilometer Post 0.00 to Kilometer Post 24.39
(MP 0.00 to MP 15.16)

APPROVED BY:

Region Administrator, Northwest Region — Date: 2/13/96

CONCURRENCE:

State Design Engineer — Date: 5/7/96

Planning Office Manager — Date: 3/4/96

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EXECUTIVE SUMMARY

SR 539, also called the Guide Meridian, is an existing five to seven-lane highway from I-5 to Horton Road and two lanes from Horton Road to the International Border with three lane sections from Laurel to Hemmi Roads and from Birch Bay/Lynden Road To Front Street. The highway connects to I-5 in Bellingham, KP 0.00 (MP 0.00), next to the Bellis Fair Mall, and extends to the Canadian international crossing, KP 24.39 (MP 15.16). The highway is about twenty-four kilometers (15 miles) long. This Route Development Plan (RDP) covers the entire length of SR 539. Presently SR 539 is a Principal Arterial highway and part of the National Highway System. The functional classification is not expected to change over the next 20 years.

SR 539 serves one of the fastest growing areas in Whatcom County. Development within the corridor is mostly residential, commercial, and agricultural. SR 539 will require both capacity and access improvements to safely and effectively handle future traffic growth.

Upon examination of the existing and projected 2015 traffic volumes for the highway it was found that segments of SR 539 would operate at a low Level Of Service (LOS) "F" in the year 2015 if no capacity improvements are undertaken. This LOS is below the acceptable LOS "D" identified as the goal for urban areas in the State Highway System Plan. It is also well below the goal of LOS "C" identified for rural areas. Therefore, this RDP recommends that by the year 2015, SR 539 should be expanded as described in the following table:

ROADWAY SEGMENT	KP (MP) LOCATION	RECOMMENDED LANE CONFIGURATION
I-5 to Horton Road	00 to 2.93 (0.00 to 1.82)	Same as existing (6 to 4 lanes w/ center-turn lanes)
Horton Road to Laurel Road	2.93 -8.08 (1.82-5.02)	4 lanes w/ center-turn lane. Restricted median to be used where needed.
Laurel Road to Hemmi Road	8.08-8.85 (5.02-5.50)	4 lanes w/ center-turn lane
Hemmi Road to Fishtrap Creek	8.85 -16.52 (5.50-10.27)	4 lanes w/ restricted median
Fishtrap Creek to Lynden NCL	16.52 -17.39 (10.27-10.81)	4 lanes or4 lanes w/ center-turn lane
Lynden NCL to Badger Road (SR 546)	18.66 -20.18 (11.69-12.54)	2 lanes or2 lanes w/ center-turn lane
Badger Road (SR 546) to International Border	20.18 -24.39 (12.54-15.16)	2 lanes w/a PACE* lane at the border

*A PACE lane is a lane for frequent international commuters and travelers to help expedite the border crossing.

In the Lynden vicinity between Tromp/Front Street and Badger Road (SR 546), two sets of alternate roadway sections are provided. The choice between the alternates is dependent upon future development in the Lynden area as well as the growth in border crossing traffic.

Based on current data and growth projections the recommended configurations will meet the desired service objectives for state route operation. The existing roadway configuration will not be changed from the I-5 interchange to Horton Road.

To accommodate expected development, several recommendations are made in this RDP. The need for additional lanes for SR 539 was developed by projecting 1994 traffic volumes to the year 2015. That number was based on a growth rate ranging between 0.6 percent and 2.23 percent compounded annually. If this highway remains a two-lane facility north of Horton Road, the projected level of service (LOS) for year 2015 is "E" (to Main Street in Lynden). The construction of additional general purpose lanes should result in a LOS of B/A. Projected Annual Average Daily Traffic (AADT)[1] for the end of the planning period ranges between 8,390 vehicles per day at KP 24.39 (MP 15.16) and 41,700 vehicles per day at KP 0.08 (MP 0.05).

The Urban Fringe Subarea Plan, a component of the Whatcom County Comprehensive Plan, envisions the land along the SR 539 corridor between the Bellingham City limits and the vicinity between Kelly and Smith roads as a major center of land use development. Increases in international traffic accompanied by implementation of the envisioned land uses in this area would significantly aggravate the existing traffic congestion and increase accident rates on SR 539 unless corrective actions are taken. These corrective actions include, but are not limited to, channelization and signalization at various intersections where accident rates are high or congestion is unacceptable.

This report recommends a restrictive median treatment on segments of this route. The restricted median is intended to enhance safety and to preserve capacity on the roadway after widening has occurred. There has been mixed public opinion on the placement of a restricted median and its overall effect. Some adjoining property owners, particularly those with commercial enterprises adjacent to SR 539, believe that restricting left turn movements with a median treatment will adversely impact them financially. The placement of this type of traffic control will likely be controversial and close coordination with the affected jurisdictions and public will be required.

Listed below are the major recommendations of this report:

1. Develop SR 539 as a four or five (incl. a center-turn lane) lane facility between Horton Road and Laurel Road. The facility may be widened asymmetrically, relative to centerline, to minimize impacts.

2. Develop SR 539 as a five (incl. a center-turn lane) lane facility between Laurel Road and Hemmi Road. The facility may be widened asymmetrically, relative to centerline, to minimize impacts.

3. Develop SR S39 as a four lane facility with restricted median between Hemmi Road and Fishtrap Creek (Lynden south city limits). The facility may be widened asymmetrically, relative to centerline, to minimize impacts.

4. Develop SR 539 as a five (incl. a center-turn lane) lane facility between Fishtrap Creek (Lynden south city limits) and Tromp Rd./Front Street vicinity. The facility may be widened asymmetrically, relative to centerline, to minimize impacts. There is an existing cemetery on the eastern side of SR 539 at the northern end of this segment that will pose a significant challenge to symmetrical widening.

5. Develop SR 539 as either a four or a five (incl. a center-turn lane) lane facility from Tromp Rd./Front Street vicinity to the City of Lynden's northern Urban Growth Boundary (MP 11.60). The facility may be widened asymmetrically, relative to centerline, to minimize impacts. There is an existing cemetery on the eastern side of SR 539, at the southern end of this segment. The alternative that ultimately is selected will depend on a variety of factors including, traffic volumes, local needs, regional needs, and safety.

6. Develop SR 539 as either a two or three (incl. a center-turn lane) lane facility from the City of Lynden's northern Urban Growth Boundary (MP 11.60) to SR-546/West Badger Road. The facility may be widened asymmetrically, relative to centerline, to minimize impacts. Again, the alternative that ultimately is chosen will depend on a variety of factors including: traffic volumes, local needs, regional needs, and safety.

7. Develop SR 539 as a two lane section between West Badger Road/SR-546 and the Canadian border. A "PACE" (Peace Arch Commuter Entrant) lane should be added at the northern segment of the section to accommodate commuter traffic volumes.

8. Replace the two existing bridges over Four Mile Creek and Ten Mile Creek.

9. Build additional bridges or widen the remaining five existing bridges; one over Wiser Lake, three over the Nooksack River, and one over Fishtrap Creek.

10. Acquire the needed right of way for roadway widening between Horton Road and the International border.

11. As the highway is widened or rebuilt in the rural areas, the shoulder widths should be increased to two and one half meters (eight feet) on each side of the highway.

12. Purchase partial limited access from Ten Mile Road north to the International Border with the exception of the Lynden urban growth area.

13. A restrictive median should be planned for sections of SR 539 from Horton Road to Laurel Road and from Hemmi Road to the south city limits of Lynden.

14. Signalization of the intersection of SR 539/Horton Road for safer operation and to accommodate the future developments proposed by Cordata.

15. Signalization of the intersection of SR 539/Hemmi Road for safer operation and to improve the LOS from "E" to "A".

16. Implementation of the ongoing access management plan, including a system of backage roads or other treatments in cooperation with local jurisdictions.

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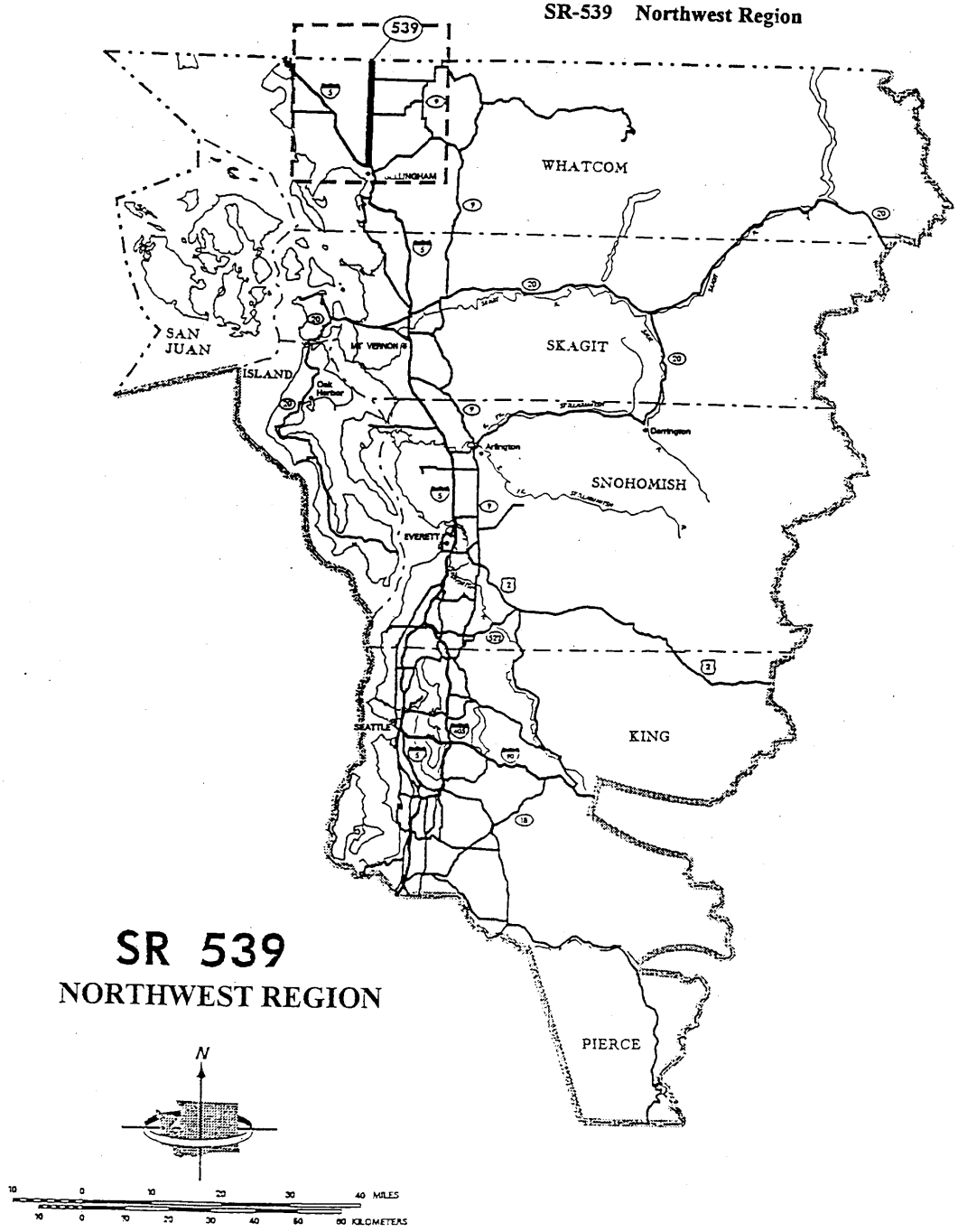
Figure 1
SR-539 Northwest Region



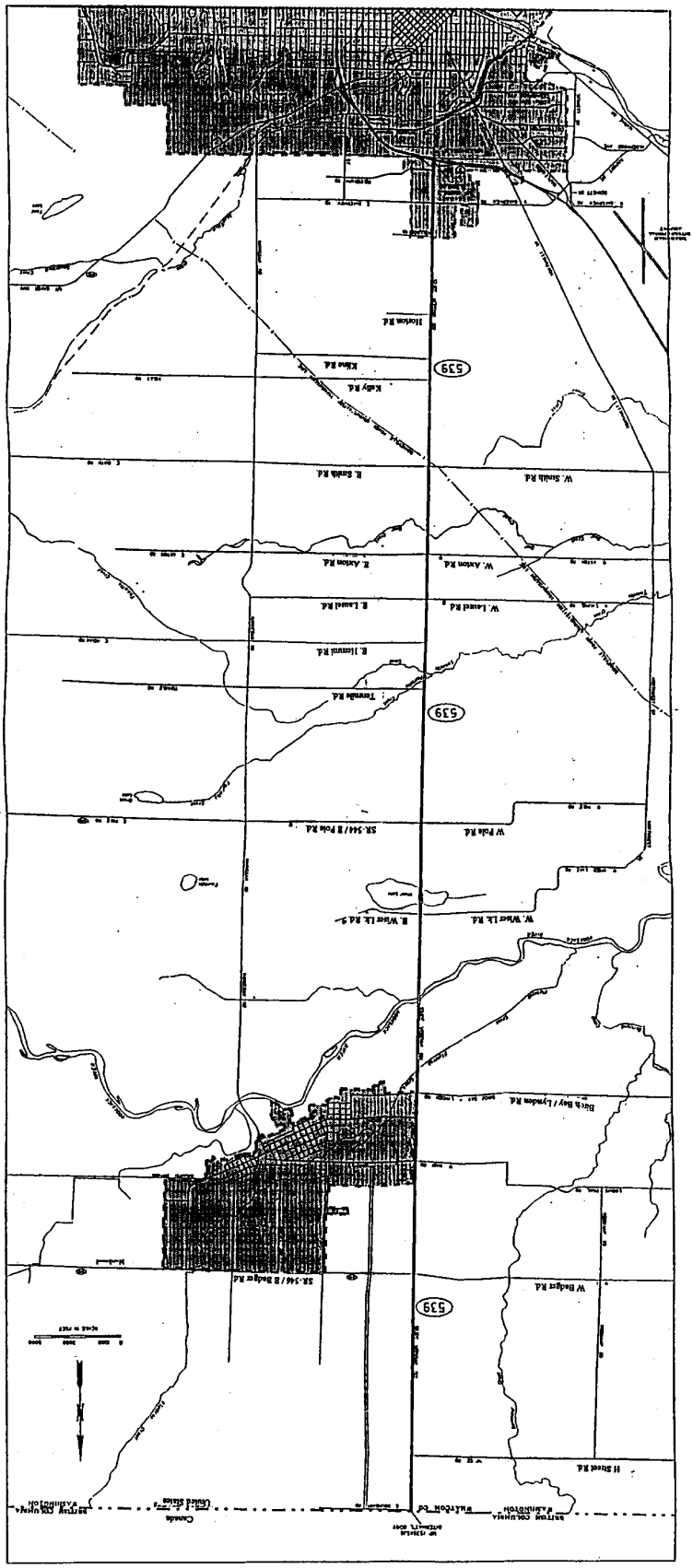


Figure 2
SR-539 Vicinity Map

SECTION 1: Introduction to the Route Development Plan

A Route Development Plan (RDP) is intended to identify the future improvements needed for a designated section of state highway to accommodate safety and capacity requirements before a future date, usually 20 years hence. This plan encompasses many factors synthesized into a recommended highway design. When approved, this long range plan will provide:

1. Guidance for regional decision makers regarding future projects on this state route;
2. Direction for the determination of impact mitigation measures for proposed developments;
3. A basis for the inclusion of improvement solutions in the State Highway System Plan; and,
4. Coordination with various stakeholders on the future development of this state route.

SR 539 is located east of I-5. Its south end connects the northern portion of the city of Bellingham to the city of Lynden and the Canadian border. This RDP covers the entire length of SR 539 from I-5 in Bellingham at Bellis Fair, Kilometerpost (KP) 0.00 Milepost [MP] 0.00 to the Intemational Border, KP 24.39 (MP 15.16).

SR 539 traverses various kinds of land uses. In the south it is dominated mostly by industrial and commercial land uses; in the middle it is predominantly occupied by rural residential, agricultural, and small pockets of commercial land uses; and in the north it is mostly agricultural. SR 539 passes through a small segment of the city of Bellingham as well as the west side of the city of Lynden.

This plan is part of the Washington State Department of Transportation (WSDOT) Northwest Region long-range Route Development Planning Program. The Regional Map (Figure 1), illustrates the location of SR 539 in relation to the WSDOT Northwest Region. Figure 2 is a vicinity map which provides a closer look at the study area.

This plan has been prepared in cooperation with local jurisdictions and agencies. Throughout the study area, relevant plans of affected cities, transit authority, county, and WSDOT were reviewed for consistency. Any significant differences were discussed. Final approval of this RDP will be issued by the Northwest Region Administrator.

This plan is intended to support local work done to meet the requirements of the Growth Management Act (GMA), Substitute House Bill (SHB) 2929, and Revised SHB (RSHB) 1025. Travel forecasts are based on local land-use projections from local planning organizations. WSDOT will work with local agencies to coordinate transportation improvements with land-use development as the agencies do their capital improvement planning. This document will be amended as needed to react to local planning. Metric units are being used in this document with the English equivalent immediately following in parenthesis. This document uses a conversion factor of 1.609 to change MP to KP directly. All other metric conversions use the standard conversions shown in the WSDOT Design Manual.

SECTION 2: Purpose and Function of Highway

Federal Functional Classification and Level of Development

The primary purpose of SR 539 is to facilitate transportation of people and goods between the state of Washington and Canada and to connect the rural/agricultural areas of northeast Whatcom County with Bellingham and I-5. This highway also serves the city of Lynden. Secondarily, SR-539 also services residential and commercial developments located along its length. The federal functional classification of the highway is Urban Principal Arterial between I-5 and Kellogg Road and Rural Principal Arterial between Kellogg Road and Canada. This classification was revised from minor arterial in 1993. The new classifications are consistent with the primary and secondary purposes of the highway[2]. SR 539 serves as an alternate to I-5 from Bellingham to the International Border for some users. Because it is a direct route to an international border crossing, SR 539 has been designated part of the National Highway System (NHS).

The 1990 WSDOT Level of Development Plan is now obsolete due to implementation of the new design matrices in 1995. Three design levels are identified in the matrix procedures. They are: basic design level (B), modified design level (M), and full design level (F). Based on route type (i.e. Interstate, NHS, or non-NHS), and the project type (i.e., preservation or improvement), a matrix is selected which provides the appropriate design criteria. Since the proposals for SR 539 will fall into the improvement category and SR 539 is an NHS route, full design criteria should be used for improvement projects on this route. Due to many physical features, both natural and man-made, this plan recommends the use of P-6 standards to minimize the disruption of the natural and built environments.

Level of Access Control

Access management classes are numbered from one to five, with Class 1 the most restrictive to access, and Class 5 the least restrictive. In the case of Classes 1 and 2, if alternative access to non-state highways is available, no access is allowed. Also, both permitted private driveways and public intersections are to be spaced a minimum distance apart as determined by the assigned class. Classes 4 and 5 balance land use with access and can allow two-way left-turn lanes (TWLTL) under certain conditions. Class 3 assumes a raised median with a TWLTL permissible only when justified. Classes 4 and 5 allow the most closely spaced access and are generally reserved for slower speed areas that are already developed. Non-conforming accesses are allowed under certain conditions, most commonly when the property's highway frontage is of insufficient length to achieve the required spacing distance.

Under the Revised Code of Washington (RCW) 47.50, SR 539 is an access controlled facility. The goal of this law is to establish levels of access management that will preserve the safety and operational characteristics of the highway. Based on the Washington Administrative Codes (WAC) 468-51 and 468-52, which implement the RCW, SR 539 has been assigned the following classes for access management in the study area:

TABLE 1

ACCESS MANAGEMENT CLASSIFICATIONS

Kilometerpost Limits (Milepost Limits)	Section	Class
0.00-0.16 (0.00-0.10)	I-5 I/C	Limited Access
0.16-8.85 (0. 10-5.50)	I-5 I/C to Hemmi Road	3
8.85-16.52 (5.50-10.27)	Hemmi Road to Fishtrap Creek (Lynden southern city limit)	2
16.52-18.66 (10.27-11.60)	Fishtrap Creek to Lynden northern city limit	4
18.66-24.39 (11.60-15.16)	Lynden northern city limit to Canada	2

Roadside Master Plan

The Route Development Plan guidelines mandate that a roadside master plan be completed as part of the planning process. However, no resources have been allocated for this function. Therefore, a general description of the roadside master planning concept and conditions on SR 539 is included at this time.

> **"The Roadside**
>
> The roadside encompasses the area between the roadway pavement edge and right of way boundaries, including median strips and auxiliary facilities such as rest areas, roadside parks, view points, historic markers, pedestrian and bicycle facilities, wetland mitigation areas, park & ride lots, and maintenance facilities adjacent to the roadway. The Washington State Department of Transportation (WSDOT) is responsible for the stewardship of roadsides along the 11,000 kilometers (7,047 miles) of state roadway, including hundreds of auxiliary facilities. The roadside is managed to fulfill three functions:
>
> **Operational functions,** such as access control, clear zone, sight distance, driver delineation, signing, trails and bikeways, and utility accommodation, providing safe and multi-use roadsides.
>
> **Environmental functions,** such as water quality, wetland and sensitive area protection, noxious weed control, noise control, habitat preservation, air quality improvement, and erosion control, to protect the natural environment and enhance the built environment.
>
> **Visual functions,** such as scenic view preservation, distraction screening, roadway and adjacent property buffering, and provisions for aesthetic harmony, to support the roadside operational and environmental functions and promote a positive quality of life."[3]

The roadside master plan process includes a roadside classification system. Sections of the highway are segmented according to their characteristics. Two basic classifications are defined, natural and built. SR 539 falls within the built classification and is further broken down within the category as follows:

1. Interstate 5 to Horton Road	Urban
2. Horton Road to 100m (330 ft.) south of Bay Lyn Drive	Rural
3. 100m south of Bay Lyn Drive to 100m north of Main Street	Urban
4. 100m north of Main Street to International Boundary	Rural

The first section is heavily "strip" developed with a number of major developments dominating the scenery. Landscaping has been required of most large developments but it has been inconsistent and does not establish either continuity or context. The appropriate treatment strategy for this section will be "blend"[3], however, the use of native vegetation, as recommended, is probably not appropriate. The spaces currently reserved for vegetation are completely unnatural and primarily ornamental.

The second section has a mixture of agriculture, residential, industrial, and commercial zoning. The character could be described as rural transitional if there were such a classification. Most of the properties can, and probably will, be developed, which will lead to **a semi-urban status.** The semi-urban classification is characterized by the built dominating the natural, whereas the reverse is currently true.

The third section encompasses the city of Lynden. The north part of town is currently rural but is under pressure to be developed on the east side of the highway. North of Main Street the west side of SR 539 is likely to remain agricultural for many years. Along the southern and central sections the west side is strip developed with little attention to landscaping or the roadside appearance in general. Often the roadway transitions directly from highway pavement to development pavement. The central part of this section, to the east of SR 539, has two cemeteries, one north of Front Street and the other to the south.

The last (fourth) section of the highway is fronted almost exclusively by dairy farms. Current growth management plans for this area call out for the agricultural uses to remain in place. Any development along SR 539 should address preservation, restoration or enhancement to the particular landscape character according to the Roadside Classification Plan guidelines to provide a unified visual character. A Roadside Master Plan will be developed using the landscape character classifications as the general scope of preservation and/or development level for the planning, development, and maintenance of the roadside. The Roadside Master Plan will identify elements along the corridor, set parameters, provide guidance and make recommendations for resource management compatible with the Roadside Classification Plan. Cities are responsible for roadside management in non-limited access areas behind the curb or beyond the ditch in the areas within their city limits.

SECTION 3: Description of Existing Facility

SR 539, also known as the Guide Meridian, was formerly designated Secondary State Highway (SSH) No. 1-B under the old state highway numbering system. SR 539 became a state highway in 1937 and was established as follows per RCW 47.17.785: "Beginning at a junction with PSH No. 1 (I-5) at Bellingham, thence northerly to the International boundary in the vicinity east of Delta."

Table 2 lists some significant projects which have occurred on SR 539 since it became a state highway:

TABLE 2
LIST OF SIGNIFICANT PAST PROJECTS

DATE COMPLETED	CONTRACT NO.	TITLE	TYPE OF WORK
04-28-78	1131	Horton Road to Main Street in Lynden	Grading and paving
10-03-79	1593	SR 5 to Kellogg Road	Grading, drainage, paving and pre-cast barrier. Widen to five lanes.
12-16-83	2515	Kok Road to Front Street—Channelization	Grading, Drainage, and Surfacing
10-26-83	2531	Main Street to West Badger Road/SR 546	Shoulder Rebuild
06-03-86	3022	Badger Road/SR 546 to International Border	Grading, Paving, Drainage, and Signing
06-04-86	3063	Pole Road/SR 544, Channelization	Channelization
09-14-88	3305	Kellogg Avenue to Horton Road	Grading, Drainage, and Paving. Widen to five lanes.
09-10-88	3389	Laurel Road to Ten Mile Road	Grade, Drain, Surface Paving, Sign and Channelization
11-20-89	3567	Jct. SR 539 and Front Street	Signal and Channelization
12-19-89	3581	Horton Road to Laurel Road	BS, Drainage, and Signal

Lane and Shoulder Width

SR 539 is a five to seven-lane facility from the I-5 interchange to Horton Road with the center lane used as a two-way left-turn lane or, at intersections, as a left-sum pocket. The lanes are 3.6 meters (12 feet) wide with curb, gutter, and five-foot sidewalks in some areas. From Laurel Road to Hemmi Road, and from Birch Bay-Lynden Road to Front Street, the highway is a three lane facility with the center lane used as a two-way left-turn lane or, at the intersections, as a left-turn pocket. The remainder of the highway is a two-lane, two-way highway from Horton Road to the International Border. The lanes are 3.3 meters (11 feet) in width with 0.9 to 3.0 meter (3 to 10 foot) shoulders on both sides. There are no special purpose lanes on SR 539.

No-Passing Zones

Approximately 24 percent of the existing two-lane highway has no-passing zones in both directions. Table 3 gives the locations of no-passing zones[4].

TABLE 3
LOCATIONS OF NO-PASSING ZONES

NORTHBOUND		SOUTHBOUND	
Beginning No-Passing KP (MP)	Ending No-Passing KP (MP)	Beginning No-Passing KP (MP)	Ending No-Passing KP (MP)
KP 2.78 (MP 1.73)	KP 3.11 (MP 1.93)	KP 2.78 (MP 1.73)	KP 3.41 (MP 2.12)
KP 4.31 (MP 2.68)	KP 4.60 (MP 2.86)	KP 4.55 (MP 2.83)	KP 4.86 (MP 3.02)
KP 5.12 (MP 3.18)	KP 5.89 (MP 3.66)	KP 5.34 (MP 3.32)	KP 6.05 (MP 3.76)
KP 6.52 (MP4.05)	KP 7.40 (MP4.60)	KP 6.66 (MP4.14)	KP 9.30 (MP5 781
KP 7.66 (MP 4.76)	KP 9.04 (MP 5.62)	KP 10.44 (MP 6.49)	KP 10.59 (MP 6.58)
KP 10.20 (MP 6.34)	KP 10.38 (MP 6.45)	KP 11.91 (MP 7.40)	KP 12.58 (MP 7.82)
KP 11.68 (MP 7.26)	KP 12.31 (MP 7.65)	KP 13.11 (MP 8.15)	KP 13.27 (MP 8.25)
KP 12.82 (MP 7.97)	KP 13.08 (MP 8.13)	KP 13.89 (MP 8.63)	KP 14.13 (MP 8.78)
KP 13.56 (MP 8.43)	KP 13.90 (MP 8.64)	KP 15.17 (MP 9.43)	KP 15.51 (MP 9.64)
KP 15.03 (MP 9.34)	KP 15.40 (MP 9.57)	KP 16.77 (MP 10.42)	KP 17.70 (MP 11.00)
KP 16.60 (MP 10.32)	KP 17.55 (MP 10.91)	KP 20.19 (MP 12.55)	KP 20.43 (MP 12.70)
KP 19.92 (MP 12.38)	KP 20.19 (MP12.55)	KP 24.30 (MP 15.10)	KP 24.39 (MP 15.16)
KP 24.12 (MP 14.99)	KP 24.39 (MP15.16)		

However, during times of heavy traffic the congestion on the majority of the route eliminates the possibility of passing regardless of the highway striping. This condition is occurring a greater proportion of the time as traffic volumes build on this route.

Posted Speed, Design Speed and Terrain

The current posted speed limits for SR 539 vary from 55 km/h (35 mph) to 80 km/h (50 mph). Within the city limits of Bellingham, the speed limit is 55 km/h (35 mph). Within the city of Lynden it is 60 km/h (40 mph). The design speeds vary from 55 km/h (35 mph) to 120 km/h (80 mph). The highway traverses generally rolling terrain from I-5 to Wiser Lake Road and level terrain from Wiser Lake Road to the International Border.

Right of Way

The existing right-of-way widths vary from 18 meters (60 feet) to 39 meters (130 feet). Slope easements and intersections require additional right of way. Table 4 is a listing of the current right-of-way widths:

TABLE 4
EXISTING RIGHT-OF-WAY WIDTHS

LOCATION		
FROM	**TO**	**EXISTING RIGHT-OF-WAY WIDTHS**
Junction at I-5	Waldren Road	30 to 39 meters (100 to 130 feet)
Waldren Road	Pole Road/SR 544	24 meters (80 feet)+
Pole Road/SR 544	International Border	18 meters (60 feet)+

Horizontal, Vertical Alignment, and Sight Distance Restrictions

There are 76 vertical curves along the entire section of SR 539. Most of the corridor is fairly straight and flat. Table 5 lists vertical alignment sections that are non-standard:

TABLE 5
NON-STANDARD VERTICAL ALIGNMENTS

LOCATION	POSTED SPEED km/h (mph)	DESIGN SPEED km/h (mph)	LENGTH Meter (Ft)	% GRADE BACK	%GRADE AHEAD
KP 1.93 (MP 1.20)	80 (50)	70 (45)	137 (450)	-.61	+3.84
KP 3.11 (MP 1.93)	80 (50)	60 (40)	24 (80)	+.00	-1.85
KP 4.23 (MP 2.63)	80 (50)	70 (45)	46 (150)	+.80	-.98
KP 5.33 (MP 3.31)	80 (50)	70 (45)	61 (200)	+120	-1.61
KP 6.79 (MP 4.22)	80 (50)	70 (45)	105 (400)	-2.64	+1.75
KP 7.56 (MP 4.70)	80 (50)	70 (45)	105 (400)	-4.20	-.40
KP 8.06 (MP 5.01)	80 (50)	70 (45)	105 (400)	-4.60	0.26
KP 13.07 (MP 8.12)	80 (50)	60 (40)	92 (300)	+.00	-3.05
KP 15.22 (MP 9.46)	80 (50)	60 (40)	105 (400)	+1.25	-1.25

Bridges and Structures

There are seven existing bridges along the SR 539 corridor. Pertinent data for these bridge is listed in Table 6.[5,6]

Program year (PROG. YEAR) reflects the life expectancy of structures and the estimated year that replacement will be needed. This time frame is an estimate based simply on a life expectancy of the structure, but actual replacement time can vary greatly.

TABLE 6
EXISTING BRIDGES

LOCATION	BRIDGE NAME AND NUMBER	WIDTH CURB TO CURB	PROG YEAR
KP 9.36 (MP 5.82)	Ten Mile Creek, Bridge No. 539/855*	8.5 meters (28 ft.)	1998
KP 9.49 (MP 5.90)	Four Mile Creek, Bridge No. 539/856*	8.5 meters (28 ft.)	1998
KP 13.56 (MP 8.43)	Wiser Lake, Bridge No. 539/858	10.8 meters (36.0 ft.)	2022
KP 14.72 (MP 9.15)	Nooksack River Overflow, Bridge No. 539/859*	8.5 meters (28 ft.)	2025
KP 15.17 (MP 9.43)	Nooksack River, Bridge No. 539/860	8.5 meters (28 ft.)	2025
KP 16.27 (MP 10.11)	Nooksack River Overflow, Bridge. No. 539/861*	8.5 meters (28 ft.)	2025
KP 16.49 (MP 10.25)	Fish Trap Creek, Bridge No. 539/862*	8.5 meters (28 ft.)	2025

* Functionally obsolete

All bridges listed as functionally obsolete have inadequate curb to curb deck width. All of the existing bridges need to be widened under the increased capacity proposal. The Four Mile and Ten Mile Bridges are to be replaced under a project titled "Horton Road to Ten Mile Road," which is currently unfunded.

Two locations have been identified as currently presenting a passage problem for fish. The culvert crossings at Deer Creek (approx. KP 5.9 [MP 3.7]) and a small tributary to the Nooksack river system (approve KP 17.9 [MP 11.1]) must be modified to alleviate the fish passage problems in association with any widening project that occurs in the crossing vicinity.

Drainage

There are four separate enclosed drainage systems on SR 539. The following is a listing of their approximate locations:

KP 0.39 to KP 2.93 (MP 0.24 to MP 1.82)	I-5 to Horton Road
KP 8.08 to KP 9.36 (MP 5.02 to MP 5.82)	Laurel Road to Ten Mile Road
KP 12.02 to KP 12.11 (MP 7.45 to MP 7.51)	East side, from Pole Road approximately 100m south
KP 16.54 to KP 17.39 (MP 10.28 to MP 10.81)	Kok Road to Front Street

There are several cross drainage course facilities along SR 539. They are visually inspected by WSDOT Maintenance and are currently functional as is.

The existing open drainage ditches along SR 539 are typically deep to help provide a certain amount of collection capacity and detention time for the road surface runoff. Because of the flat terrain in the vicinity of SR 539, the waters collected in the ditch sections do not discharge quickly into the receiving bodies of water.

Channelization and Signalization

Table 7 lists the intersections on SR 539 that have turn pockets, and the locations of median turning lanes:

TABLE 7
EXISTING TURN POCKETS AND MEDIAN TURNING LANES

LOCATION	MILEPOST	EXISTING TURN LANE
Telegraph Road/SR 539	KP 0.18	Left-turn pocket (NB to WB)
Access Shopping Center/SR 539	KP 0.53	Left-turn pocket (NB to WB)
Prince Avenue/SR 539	KP 0.97	Left-turn pocket (NB to WB; SB to EB)
Kellogg Road/SR 539	KP 1.38	Left-turn pocket (NB to WB; SB to EB)
Horton Road/SR 539	KP 2.78	Left-turn pocket (NB to WB; SB to EB)
Smith Road/SR 539	KP 5.63	Left-turn pocket (NB to WB; SB to EB)
Axton Road/SR 539	KP 7.22	Left-turn pocket (NB to WB; SB to EB)
Laurel Road/SR 539	KP 8.05	Left-turn pocket (NB to WB; SB to EB)
Hernmi Road/SR 539	KP 8.85	Left-turn pocket (NB to WB; SB to EB)
Pole Road/SR 544/SR 539	KP 12.08	Left-turn pocket (NB to WB; SB to EB)
Birch Bay/Lynden Road/SR 539	KP 16.94	Left-turn pocket (NB to WB; SB to EB)
Tromp Street/SR 539	KP 17.33	Left-turn pocket (NB to WB)
Front Street/SR 539	KP 17.36	Left-turn pocket (SB to EB) Right-turn pocket (NB to EB)
SR 539	KP 0.27 to KP 0.37	Two-way left-turn lane
SR 539	KP 0.56 to KP 0.69	Two-way left-turn lane
SR 539	KP 1.48 to KP 2.78	Two-way left-turn lane
SR 539	KP 8.13 to KP 8.75	Two-way left-turn lane
SR 539	KP 17.02 to KP 17.25	Two-way left-turn lane

There are fourteen intersections along SR 539 that have traffic signals. These signals are listed in Table 8. There are two projects that are being developed to signalize the intersections of SR 539 with Main Street and Badger Road in the city of Lynden.

TABLE 8
EXISTING TRAFFIC SIGNALS

LOCATION	MILEPOST	TYPE	LEFT-TURN ARROW
I-5 SB Off-Ramp	KP 0.00 (MP 0.00)	Fully Actuated	Yes
I-5 NB Off-Ramp	KP 0.11 (MP 0.07)	Fully Actuated	Yes
Entrance to Bellis Fair (Telegraph Road)	KP 0.18 (MP 0.11)	Fully Actuated	Yes
E Bellis Fair PKWY	KP (MP 0.30)	Fully Actuated	Yes
Bakerview Road	KP 0.77 (MP 0.48)	Semi-Actuated	Yes
Westerly Rd./Holiday Inn	KP (MP 0.65)	Fully Actuated	No
Kellogg Road	KP 1.38 (MP 0.86)	Fully Actuated	Yes
Smith Road	KP 5.63 (MP 3.50)	Fully Actuated	No
Axton Road	KP 7.24 (MP 4.50)	Fully Actuated	No
Laurel Road	KP 8.05 (MP 5.00)	Fully Actuated	No
Pole Road/SR544	KP 12.08(MP 7.51)	Fully Actuated	No
Birch Bay-Lynden Road/ Kok Road	KP 16.94 (MP 10.53)	Fully Actuated	No
Front Street	KP 17.38 (MP 10.80	Fully Actuated	No
West Badger Road/ SR 546	KP 20.18 (MP 12.54)	Flashing Beacon	No

Existing Zoning and Land Use

The zoning classifications adjacent to SR 539 are residential, commercial-industrial and agricultural[7]. At the southern terminus, a large shopping center (Bellis Fair) and a large industrial-commercial-residential complex (Cordata) have been built. The section of the highway between Kellogg Street and Badger Road exhibits commercial, agricultural and rural residential zoning, consisting of a mixture of one dwelling unit per .8, 2.0, and 4.1 hectare (two, five, and ten acre) parcels. North of W. Badger Road/SR 546 is mostly agricultural land. This agricultural land supplies significant farm income from dairy products, livestock, and other farm related products.

Wetlands, Flood Plain, Geological Hazards and Soils

Creeks and wetlands occur all along the route adjacent to the existing highway. Creeks include: Deer Creek, Ten Mile Creek, Four Mile Creek, and Fishtrap Creek. Numerous wetlands are associated with these creeks. The wetlands in the vicinity of the Ten Mile, Four Mile, and Deer Creek are classified as environmentally-sensitive areas. Appendix H is a Wetland Inventory map

for general wetland locations along the route. SR 539 crosses the Nooksack River 100-year flood plain from approximately 600 meters north of Wiser Lake Road to approximately 30 meters south of Birch Bay-Lynden Road (about 2.29 km in length).

There are no geological hazardous areas along SR 539. Archaeological and historic studies have been conducted for the section of this highway from Horton Road to Ten Mile Road. The resultant report states that if there were any areas of archaeological or historical significance within this section of SR 539 they have been destroyed by over 100 years of property development. Archaeological and historical studies for the remainder of the route have not been conducted.

Soil types encountered along the route are hale silt loam, pagborn loam, Whatcom silt loam, laxton loam and tromp loam. These types of soils are indicative of prime farmland with the exception of Whatcom silt loam.

Urban Section

SR 539 is located in the Bellingham urban area from its junction with I-5 to the Smith Road intersection. Within the city limits of Lynden the zoning is also urban in character. There are two curb, gutter and sidewalk sections along SR 539. One of these runs from the junction at I-5 to Horton Road on both sides of the highway (not necessarily continuous). The second section is located on the west side of SR 539 between Birch Bay/Lynden Road and Front Street Commercial establishments, industrial complexes, and business parks occupy hundreds of acres in the southern part of the corridor while the northern end, with the exception of the city of Lynden, is mostly agricultural.

Utilities

There are various existing utilities within the highway corridor. They are Puget Sound Power and Light Co., city of Bellingham Water Department, Cascade Natural Gas, U.S. West Communications, AT&T Communications, TCI Cablevision, Whatcom County Cablevision, Belden Acres Water Association, KOK Road Water Association, Laurel Road Water Association. GTE Northwest, and Deer Creek Water Association. Many of these utilities will need to be relocated before SR 539 is widened.

Interchange, Intersections, and the Border Crossing

The lone interchange on the route is a full-diamond interchange located at the junction with I-5. Figure 3, page 3-8, shows the configuration of this interchange, which includes a southbound SR 539 to southbout I-5 loop on-ramp and a slip ramp off the northbound I-5 off ramp that feeds directly into the Bellis Fair Mall. Although an unusual configuration, this slip ramp considerably eases the traffic impacts of the mall on SR 539. There are 33 intersections throughout the entire length of SR 539. The major intersections; Pole Rd./SR 544, Front Street and W. Badger Rd./SR 546; are shown in figures 4,5, and 6, on pages 3-9, 3-10, and 3-11. The border crossing configuration is shown in figure 7 on page 3-12.

Figure 3
I-5/SR-539 Interchange

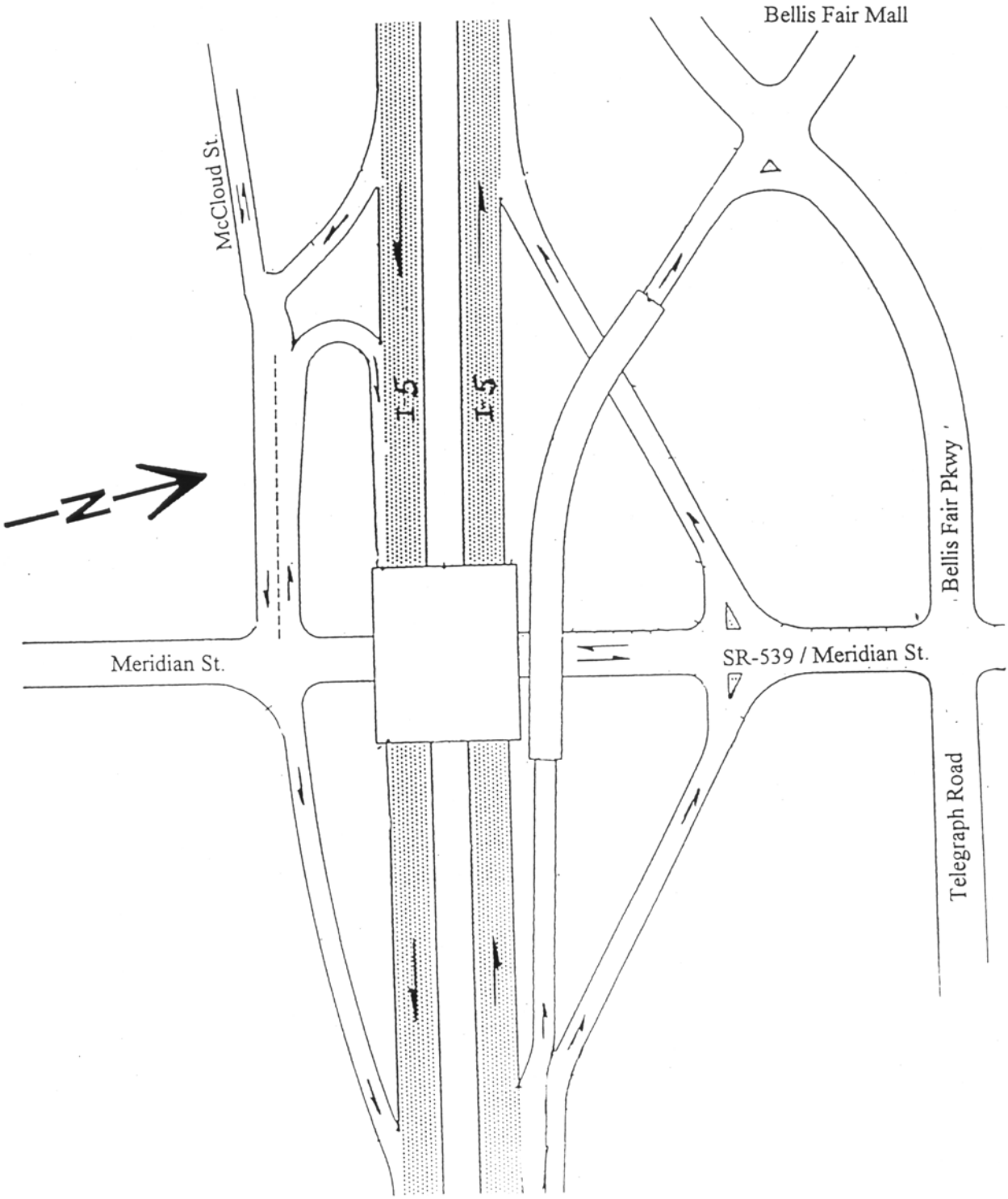


Figure 4
West Pole Road/SR-539 Intersection

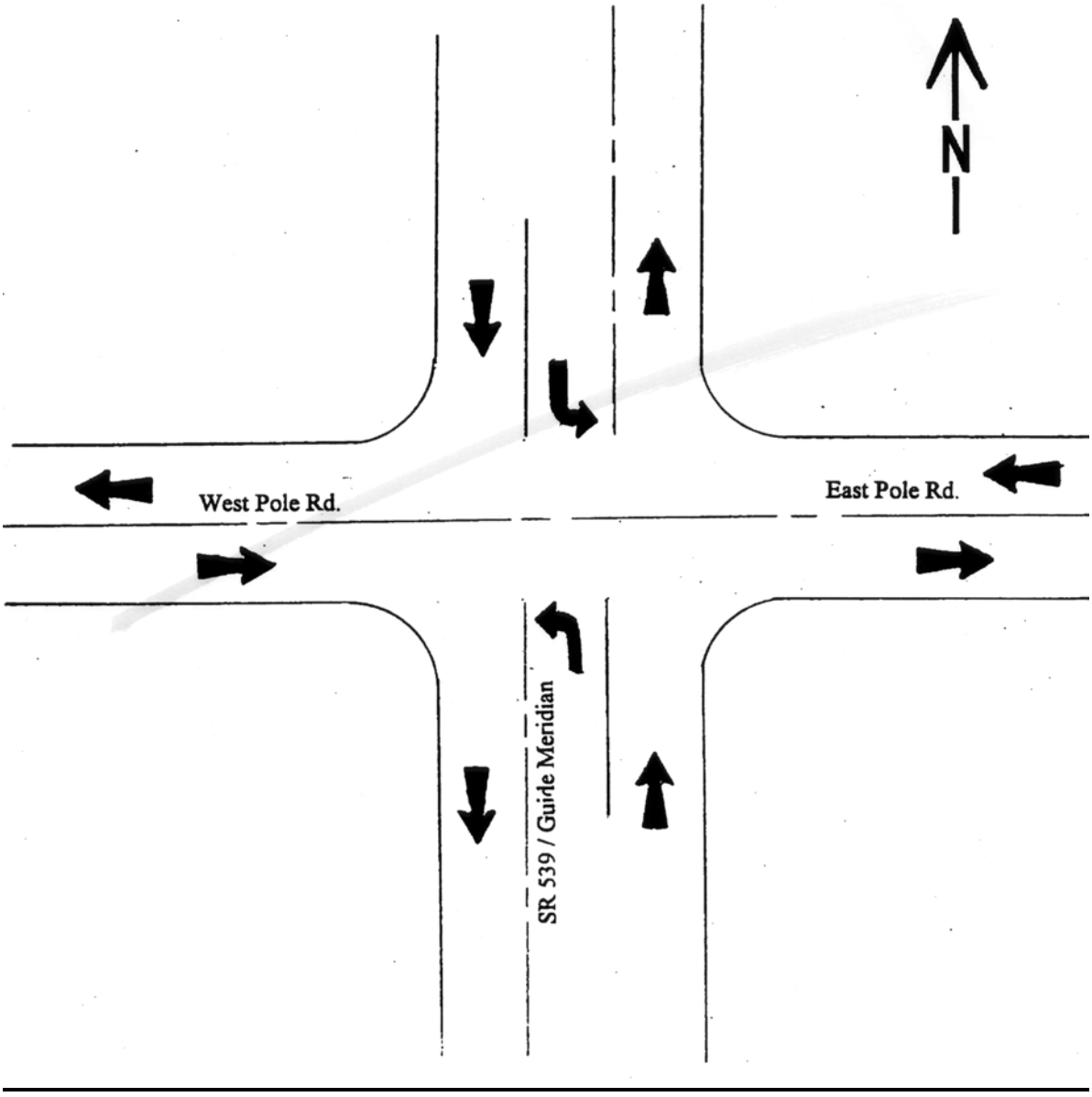


Figure 5
West Main Street/SR-539 Intersection

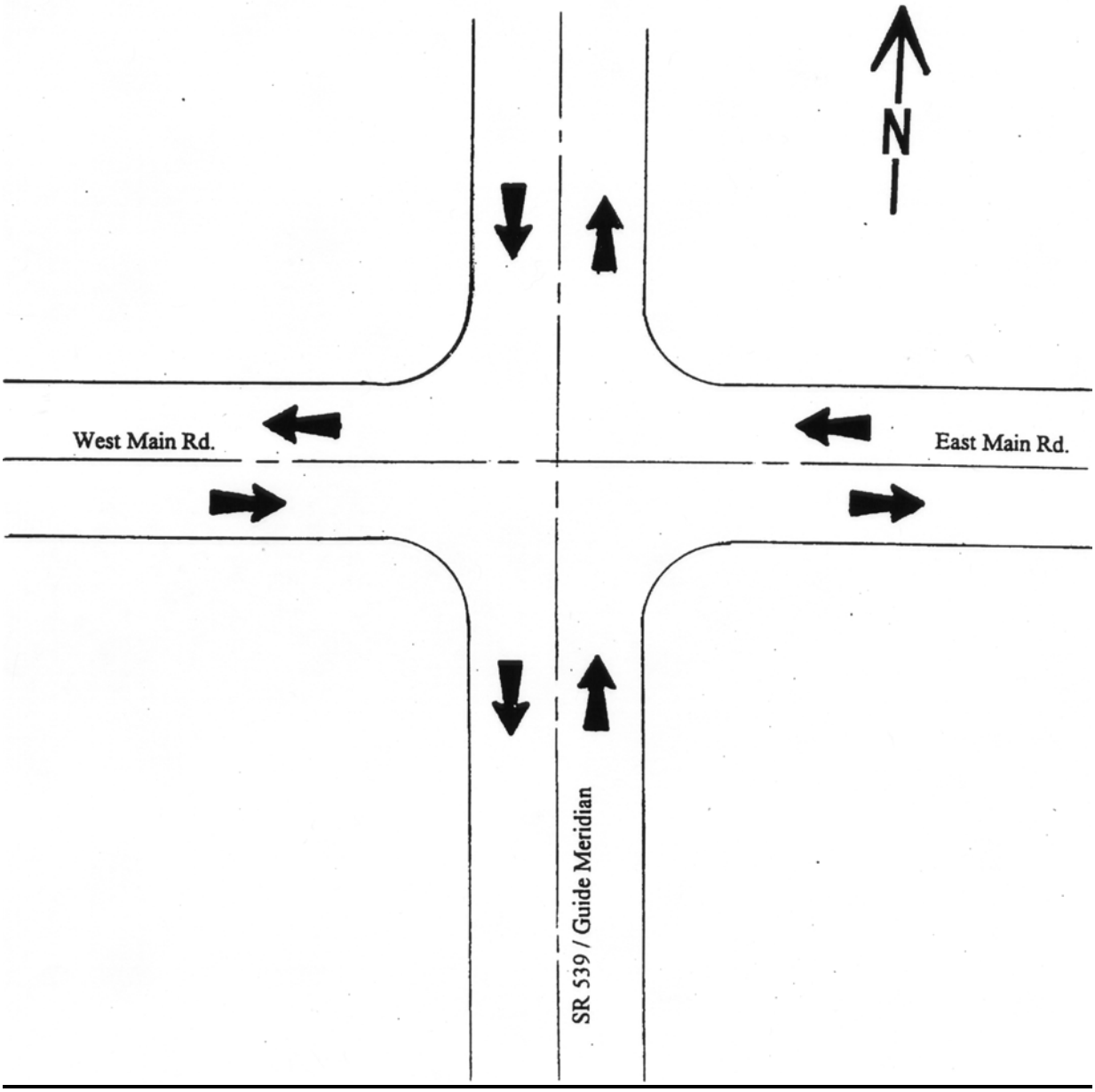


Figure 6
(SR-546)West Badger Road/SR-539 Intersection

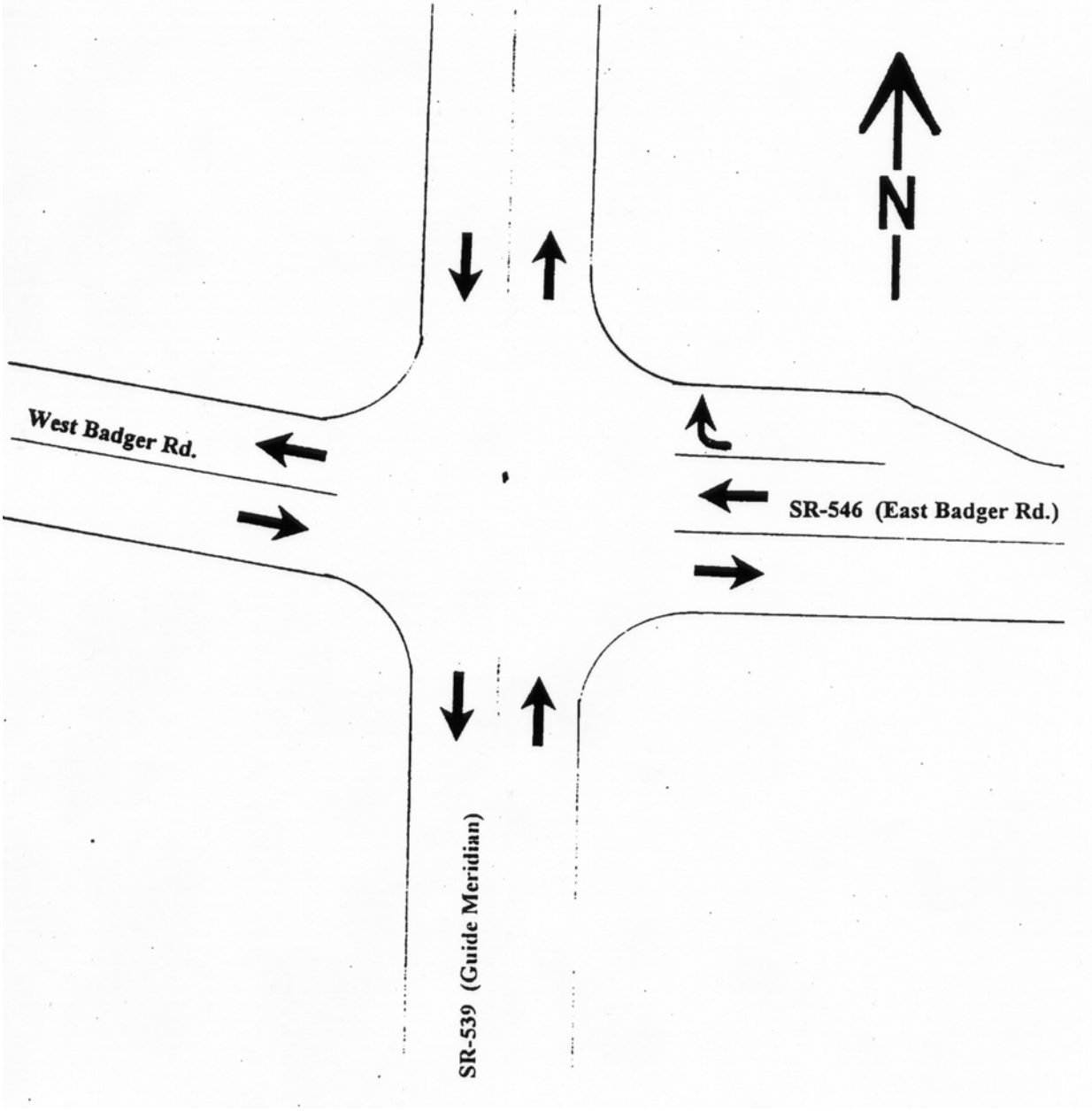
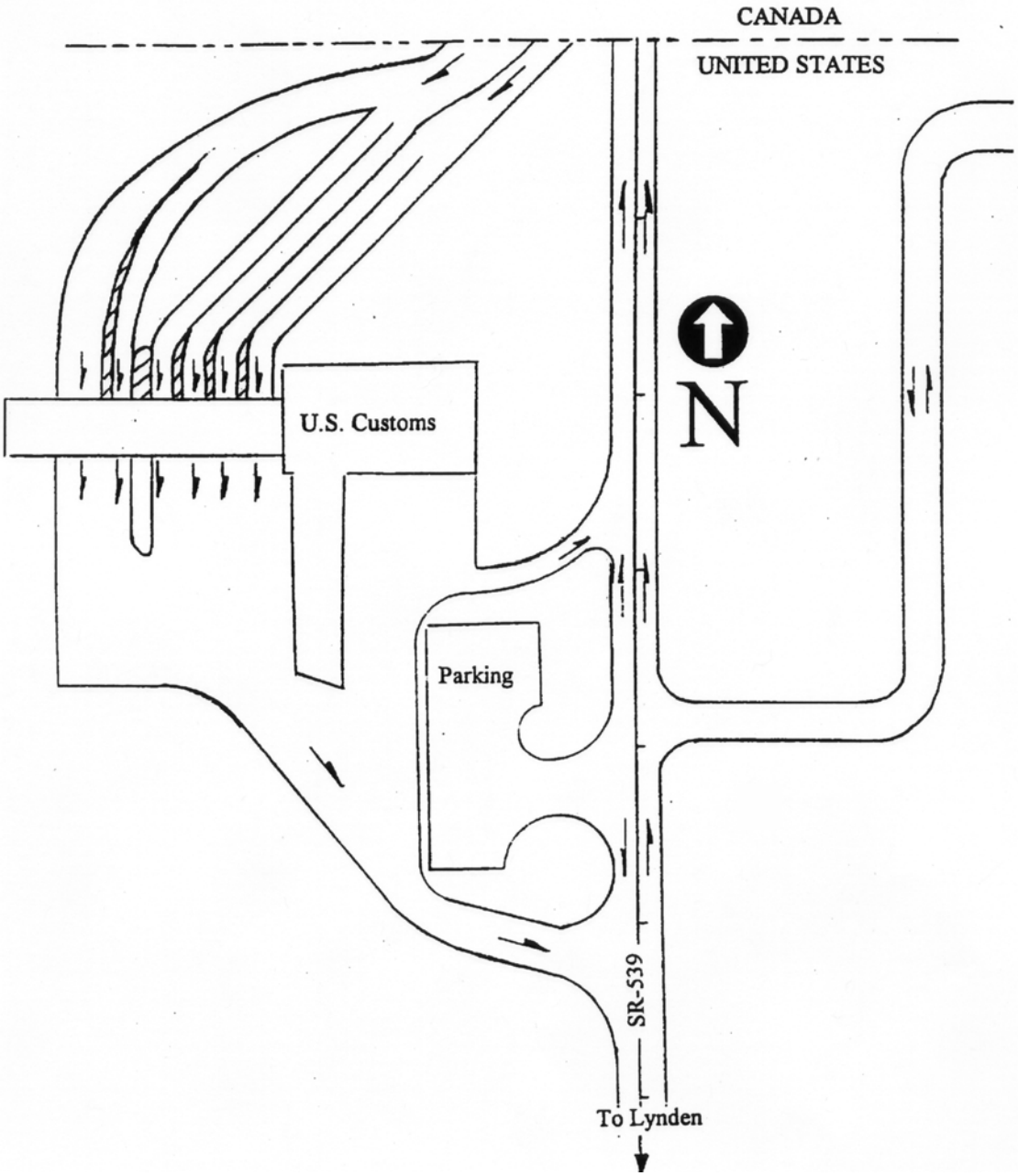


Figure 7
U.S. / Canada Border Crossing Lynden WA



Transportation Systems Management (TSM)

The Whatcom County Transit Authority (WTA) has an existing bus route from Bellingham to Lynden. At present, buses stop on the shoulder. No surveillance control and driver information systems, HOV lanes or separate bicycle facilities exist along SR 539. There is an existing park and ride (P&R) lot served by Whatcom County Transit, route no. 8C. The P&R lot is located in Bellingham, approximately 1.6 kilometers (one mile) west of the southern terminus of SR 539. The capacity of the lot is 30 stalls and the utilization rate is 85 percent[8]. There is a proposed P&R to be located in the city of Lynden. The WTA's preferred location, at the time of this printing, is in the vicinity of 19th Street and Front Street. The WSDOT does not operate any formalized carpooling programs, nor does it have a policy to put one into effect. It is the intent of the WSDOT to rely on the regional transit agency or local businesses to provide and operate such programs.

Other Related Facilities

There is a school (Meridian High School) west of SR 539 on Laurel Road, a fire station and a mail delivery route within the general area of the highway corridor. There are no existing railroad crossings, airports or equestrian trails along the route.

SECTION 4: Present Operating Conditions

Existing Traffic Conditions

Traffic volumes along SR 539 vary according to the location, time of day and season. The volume of traffic is heaviest on the south section of the highway between its junction with I-5 and the Bellis Fair shopping area. Presently, SR 539 is severely congested during peak periods of morning and evening commuter traffic. A number of new developments in the highway corridor are expected to add significant amounts of traffic.

Annual Average Daily Traffic (AADT) for the year 1994 ranged from 4,800 vehicles at the border to 37,000 vehicles at the junction of I-5. The AADT numbers reflect truck percentages that vary from 8 percent to 9 percent throughout the route.

Table 9 below shows the 1994 traffic volumes for various segments of SR 539.

TABLE 9
EXISTING TRAFFIC INFORMATION

LOCATION	KILOMETER POST (MILEPOST)	1994 AADT	PM PEAK	TRUCK %	LOS
I-5 Interchange to Telegraph Road	0.0 to 0.18 (0.00 to 0.11)	37000	3290	8	D/C
Telegraph Rd. to Horton Road	0.18 to 5.63 (0.11 to 3.50)	23300	2070	9	D/C
Horton Rd. to Ten Mile Road	5.63 to 12.08 (3.50 to 7.51)	18000	1600	9	F
Ten Mile Rd. to Birch Bay/Lynden	12.08 to 17.33 (7.51 to 10.77)	17800	1480	9	E
Birch Bay/Lynden to Jct. E Main Street	17.33 to 18.15 (10.77 to 11.28)	13600	1090	8	D
Jct. E Main St. to W Badger/SR-546	18.15 to 20.18 (11.28 to 12.54)	9500	820	9	C
W Badger/SR-546 to International Border	20.18 to 24.39 (12.54to 15.16)	4800	490	9	B

The Level of Service (LOS) associated with lane capacity was analyzed at various locations along the mainline. Six levels of service are utilized to define a highway facility. They are given letter designations, from A to F. with LOS A representing the best operating conditions and LOS F. the worst.

1. LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

2. LOS B is in the range of stable flow, but the presence of other users in the traffic stream begin to be noticeable.

3. LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.

4. LOS D represents high-density, but stable flow speed. Freedom to maneuver is severely restricted and the driver or pedestrian experiences a generally poor level of comfort and convenience.

5. LOS E represents an operating condition at or near the capacity level. All speeds are reduced to a low, but relatively uniform value.

6. LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the capacity at that point.

Table 10 shows the AADT traffic information from 1991 to 1994 as listed in the 1994 Annual Traffic Report.

TABLE 10
AADT AT VARIOUS SECTIONS

SECTION	1991	1992	1993	1994
North of Jct. SR 5	NA	NA	NA	37000
North of Jct. Kellogg Rd	19000	19000	20000	21000
North of Jct. Smith Rd	17000	17000	18000	19000
North of Jct. Laurel Rd	16000	16000	17000	18000
North of Jct. SR 544	14000	14000	15000	17000
North of Jct. Main St.	9600	9900	10000	11000
South of Jct. SR 546	NA	NA	NA	7900
North of Jct. SR 546	NA	NA	NA	4800
South of Jct. H St.	NA	NA	5200	5400
North of Jct. H St.	NA	NA	4800	4700
South of the International Boundary	5300	5500	5600	4200

Pedestrian and Bicycle Facilities

Currently, SR 539 is not a signed bicycle route. Bicycling on SR 539, while permitted, is undesirable due to narrow shoulder widths at several locations. There are existing sidewalks within much of the urbanized section of Bellingham and also in the high pedestrian use area in the Lynden vicinity. The Whatcom County Comprehensive Plan (proposed) has identified SR 539 as one of their bicycle routes. WSDOT design standards (Figure 1020-7) require a minimum 1.2m (4 ft.) paved shoulder (open shoulder roadway sections) or a 1.5m (5 ft.) distance from curb face to edge stripe (curbed roadway sections-no parking) for bicycle use. The section between I-5 and Horton Road is a five to seven lane roadway with curb, gutter, sidewalks, enclosed drainage, and planting strips on both sides of the roadway. WSDOT design standards for curbed roadway sections with bicycle use are not currently met along this urban section.

Bus Pullouts and Routes

Whatcom County Transit Authority provides public transportation along SR 539 from Bellingham to Lynden. Bus Route 9A runs every hour. There are narrow existing bus pullouts along the shoulder of the highway. Their locations are listed in Table 11.[9]

TABLE 11
LOCATIONS OF EXISTING BUS PULLOUTS.

KILOMETERPOST (MILEPOST)	INTERSECTION	DIRECTION	SIDE
KP 2.78 (MP 1.73)	Horton Road	NB & SB	Far side stop
KP3.59 (MP 2.23)	Kline Road	NB	Far side stop
KP 3.59 (MP 2.23)	Kline Road	SB	Near side stop
KP 5.63 (MP 3.50)	Smith Road	NB & SB	Near side stop
KP 8.05 (MP 5.00)	Laurel Road	NB	Far side stop
KP 8.05 (MP 5.00)	Laurel Road	SB	Near side stop
KP 10.47 (MP 6.51)	King Tut Road	NB & SB	Far side stop
KP 12.08 (MP 7.51)	Pole Rd/SR 544	NB	Near side stop
KP 12.08 (A 7.51)	Pole Rd/SR 544	SB	Far side stop
KP 16.72 (MP 10.39)	Birch Bay/Lynden Rd.	NB	Far side stop
KP 16.72 (MP 10.39)	Birch Bay/Lynden Rd.	SB	Near side stop

Proposed bus pullouts are listed in Section 5 of this Route Development Plan.

Rest Areas

Currently, no rest area is located along SR 539

Accident History

There were 1,286 reported accidents and seven fatal accidents for the period from January 1, 1989 to December 31, 1994, along SR 539. Nine hundred thirty-five people were injured and eight people were killed. Table 12 compares seven sections of SR 539 with the 1994 statewide highway accident rate. Appendix D includes a complete listing of all accidents. The 1993 state highway average accident rate was 2.56. in urban areas and 1.35 in rural areas[10]. These statewide averages are based on data from roadways classified as principal arterials.

TABLE 12
ACCIDENT STATISTICS FOR SR 539
JANUARY.1, 1994 TO DECEMBER 31, 1994

LOCATION	CLASS	AADT	TOTAL ACCIDENTS** *	TOTAL ACCIDENT RATE***
I-5 through Telegraph	U1	37,000	27 (16,11,0)	2.00
North of Telegraph through Horton	U1-R1	25,000	74 (46,28,0)	5.01
North of Horton through Ten Mile	R1	18,000	63 (29,34,0)	2.25
North of Ten Mile through Birch Bay/Lynden	R1	18,000	48 (25,23,0)	1.61
North of Birch Bay/Lynden through E Main Street	R1	15,000	18 (15,3,0)	3.29
North of E Main St. through R1 W Badger/SR 546	R1	9500	9 (5,4,0)	2.06
North of W Badger/SR 546 to International Border	R1	4800	8 (5,2,1)	1.74
State Average 1994	U1			2.83
State Average 1994	R1			1.38

*U=Urban R=Rural 1=Principal Arterial
** (Property damage only, Injury, Fatality)
*** Accident rates are per million miles of travel.

There were three head-on collisions at non-intersection locations, one overturned vehicle at a non-intersection location, one vehicle rear-ended, one vehicle striking a fixed object, and one entering at an angle that resulted in seven separate fatal accidents. Six of these fatal accidents involved one fatality each and one accident resulted in two fatalities. The fatal accidents occurred at different locations throughout the length of the route.

Table 13 lists the number and types of accidents that occurred along the entire route for a four year period.

TABLE 13
NUMBERS AND TYPES OF ACCIDENTS
(10/89-10/93)

TYPE	NUMBER	PERCENTAGE
Entering at Angle	81	12%
Rearend	268	41%
Overturn	17	2 %
Same Direction-Sideswipe	37	6%
Opposite Direction-Sideswipe	7	1%
Opposite Direction-Head-on	7	1%
Fixed Object	54	8%
Other	188	29%
TOTAL	659	100%

The 1994 review of HAL's (High Accident Locations); HAC's (High Accident Corridors); and HAMs (High Accident Miles) Report indicate that there are two new HAL's and one new HAC location. The HAC location is identified from Van Wyck Rd. to the Canadian Border with a total of 750 accidents having occurred in this 21.98 kilometer (13.66 mile) corridor. The large number of rearend, enter at angle, and driveway related accidents are common to this type of highway with many private and commercial driveways and intersections.

The two new HAL locations are identified below:

1. SR 539/SR 546-Badger Rd. vicinity with a total of 24 accidents from January 1, 1991 to December 30, 1992. The high proportion of enter at angle and left turn accidents indicate the need to install signals at this intersection. Signal project PIN#1 153908B will correct the problem.

2. SR 539/Between E. Prairie Rd. & "H" St. with a total of 11 accidents from January 1, 1991 to December 31, 1992. The high proportion of driveway related accidents indicate the need to provide adequate sight distance to all driveways, adding warning signs, or possibly closing some of the driveways.

Table 14 shows other places along the route where accidents are concentrated but not coded in the 1992 High Accident Location Review from October 1, 1990 to September 30, 1993 because the locations do not meet the criteria for HAL's.

TABLE 14
ACCIDENTS NOT CODED IN THE 1992 HIGH ACCIDENT LOCATION REVIEW

KILOMETER POST	LOCATION	PROPERTY DAMAGE	INJURY	FATAL	TOTAL ACCIDENTS
KP 0.18	Telegraph Road	30	13	0	43
KP 0.77	Bakerview Road	19	10	0	29
KP 1.05	Westerly Road		3	0	9
KP 3.99	Kelly Road		4	0	8
KP 5.63	Smith Road	17	11	0	28
KP 7.24	Axton Road		7	O	12
KP 12.08	W Pole Rd./SR-544	15	11	O	26
KP 13.79	Wiser Lake Road	2	6	0	8
KP 15.38	River Road	3	2	0	5
KP 16.94	Birch Bay/Lynden Road	10	4	0	14
KP 17.38	Front Road	7	3	0	10
KP 20.18	West Badger Road/	18	13	0	31

SECTION 5: The Route Development Plan

Six Year Program[14]

Until recently, WSDOT has maintained a two-year transportation improvement program. In the past this program was developed by the many department divisions proposing projects for the next two years based on needs within their section. These projects were prioritized based on first maintaining the existing system and then adding capital improvements. The proposed program was then presented to the legislature for their approval.

WSDOT has recently revised the prioritization process described above. In 1995 a document entitled the State Highway System Plan (SHSP) was published. This plan addresses transportation facilities owned and operated by the state and represents the department's 20 year long range plan for maintaining, preserving, and improving state highways. Henceforth, projects considered for funding will need to be identified in the SHSP as being deficient in some respect based on identified service objectives in the Plan. The SHSP and this Route Development Plan represent two important building blocks of a six year program. The process for selecting mobility (capacity improvement) projects has also changed. Proposed mobility projects must undergo a rigorous cost-benefit analysis. Projects are then ranked on the biggest return for the investment dollar.

In late 1995 the Transportation Commission directed the department to develop a six year transportation improvement plan. A draft of this plan has recently been published for the mobility subprogram. However, the two year funding approval cycle based on the legislative budget cycle has not changed. This means that, though the projects listed below are in the six-year plan, they may not be funded for design or construction, and the plan could change depending on newly identified needs.

All "currently unfunded" capacity improvement projects are on hold due to a shortage of available funding. The Horton Road to Laurel Road Stage 1 Project was put on hold following submittal of the draft design report for this improvement proposal. Dependent on legislative approval, the Department hopes to be able to fund the next phase of project development, right of way purchase and PS&E development, in the 97-99 biennium.

The City of Lynden has included a project in their six year transportation improvement program (TIP) for the SR 539/Front St./Tromp Rd. intersection. The project would realign Tromp Rd. to match Front St. at SR 539.

Table 15 lists the current proposals in the six year plan for SR 539 as of April 8, 1996.

TABLE 15
"SIX-YEAR PROGRAM"—WSDOT PROPOSED PROJECTS FOR SR 539

KILOMETER POST MILEPOST	PROJECT NAME	AD DATE	DESCRIPTION
KP 2.78 to 8.05 (MP 1.73 to 5.00)	Horton Road to Laurel Road Stage 1 Widening	Currently unfunded	Project to widen existing roadway to 4/5 lanes
KP 9.65 to 24.39 (MP 6.00 to 15.16)	Ten Mile Rd. to International Border—Widening*	Funded for Predesign & Environmental. only	Project to widen roadway to 3/4 lanes
KP 20.18 (MP 12.54)	Jct. SR-546—Signalization	3-96	Project to signalize intersection
KP 16.94 (MP 10.53)	Lynden Park & Ride Lot	1-98	Project to construct Park & Ride lot
KP 18.16 (MP 11.28)	Jct. West Main St. Signalization	4-96	Project to install traffic signal

*This project develops the design report for the entire project length; provides construction from Fishtrap Creek to Main Street in Lynden only. The design EIS for this project is currently being initiated.

Comparison of 1993 and 2015 Conditions

Upon examination of the existing and projected 2015 traffic volumes for the highway it was found that segments of SR 539 would operate at a low level of service "F" in the year 2015 if no capacity improvements are undertaken. This LOS is below the acceptable LOS D which is the identified service objective for state highways in urban areas in the State Highway Systems Plan (SHSP). It is also well below the goal of LOS C identified for state highways in rural areas. Therefore, this plan recommends that the highway segments that will not meet the SHSP service objectives for LOS be widened as needed. The existing roadway configuration will not be changed from the I-5 interchange to Horton Road.

To justify the decision to increase capacity by making SR 539 a multi-lane principal arterial highway, an AADT between 18,000 and 20,000 vehicles per day and peak hour volumes of over 700 vehicles per hour must be projected for the design year. The growth rate for traffic varies from 0.6 percent at the southern terminus to 2.23 percent at the northern terminus. The compounded annual growth rates (PM peak hour) were prepared by the JHK consultant firm for the Transportation Element of Whatcom County's Comprehensive Plan. The ADT and peak hour numbers are for both directions of travel. Table 16 shows the projected traffic conditions for the year 2015 using the County's projected growth rates.

TABLE 16

2015 PRO.JECTED PEAK TRAFFIC VOLUMES & LOS

LOCATION	1994 ADT	GROWTH RATE (PM %)	1994 PM PEAK HOUR	2015 PM PEAK HOUR	2015 LOS BUILD	2015 NO—BUILD LOS*
I-5 Interchange to Telegraph Road	37000	0.6%	3290	3750	D/C	D/C
Telegraph Rd. to Horton Road	23300	0.6%	2070	2360	D/C	D/C
Horton Rd. to Ten Mile Road	18000	0.67%	1600	1850	D/B	D/B
Ten Mile Rd. to Birch Bay/Lynden	17800	0.65%	1480	1610	A/A	E
Birch Bay/Lynden to Jct. E Main Street	13600	1.09%	1090	1350	B/A	E
Jct. E Main St. to W Badger/SR 546	9500	1.12%	820	1020	A/A	D
W Badger/SR 546 to International Border	4800	2.23%	490	860	A/A	C

*Nobuild scenario assumes the completion of Whatcom County's core & cornnutted transportation improvements. These improvements include the widening of SR 539 between Horton and Laurel to 4 lanes, and between Laurel and Heranu to 5 lanes by the year 2015.

In order to achieve the SHSP goals for levels of service the following recommendations are made. By the year 2015, SR 539 should be built out to fou'r/five lanes from Horton Rd. to Laurel Rd., five lanes from Laurel Rd. to Hemmi Rd., four lanes from Hemrni Rd. to Fishtrap Ck. (Lynden south city limits), and five lanes from Fishtrap Ck. to Tromp/Front St.. From Tromp/Front to the Lynden north city limits (MP 11.60) we are furnishing two alternate roadway sections; a five-lane configuration which includes a center turn lane or a four-lane roadway section. From the Lynden north city limits to SR-546/W Badger Road (MP 12.54) we are also providing for two alternate roadway sections; a three lane configuration which provides a center turn lane or a two lane configuration. From SR-546/W. Badger Road to the international border our recommendation is for two lanes with a "PACE" lane added at the border to expedite border crossings for frequent users. Based on current data and growth projections the revised configurations will meet the desired service objectives for state route operation. However, the data and traffic projections should be periodically reexamined for accuracy. If, as a result of the reexamination process it is determined the recommendations are incorrect, adjustments to the recommendations will be made.

The growth rates used to forecast volumes for SR 539 have come from the Whatcom County Comprehensive Plan. The City of Lynden has a significantly different forecast of growth in their Comprehensive Plan. The WSDOT used the county data and growth rate forecasts for this RDP because it is more applicable to the entire length of the corridor and route. It should be mentioned that the difference in growth rates makes a difference in the projected volumes and

consequent solutions. Table 17 shows the differences between the county and city growth rates. As stated earlier, traffic volumes should be monitored periodically to check the accuracy of the projected growth forecast. If the growth rate is found to differ significantly in the vicinity of the City of Lynden, the recommendations for SR 539 may be subject to revisions.

TABLE 17
COMPARISON OF CITY & COUNTY GROWTH RATES

SR 539 Segment	City of Lynden projections (Evans & Assoc.)	Whatcom County projections (JHK)
Birch Bay/Lynden to Main	1993 1,230 PM peak 2010 2,765 PM peak (growth rate = 4.88%)	1994 1,090 PM peak 2015-1,350 PM peak(LOS E) (growth rate = 1.09%)
Main to SR-546 (Badger)	1993 1,230 PM peak	1994 820 PM peak
	2010 2,900 PM peak (growth rate = 5.17%)	2015 1,020 PM peak (LOS D) (growth rate = 1.12%)

As part of the proposed widening, this plan recommends a restrictive median treatment for the section of SR 539 from Hemmi Road to the south city limits of Lynden. The restrictive median is intended to help prevent future accident problems associated with the proposed extra lanes, left turn movements, and projected traffic volume increases. The projected volumes, speeds, and assigned land use indicate a restrictive median to be a better choice than a two-way left turn lane. The restrictive median is also mandatory for the access classification (class 2) that has been assigned to this segment. The access classification system (WAC 468-52) is intended to improve safety and preserve capacity on state roadways

The proposed restrictive median treatment has met with mixed feelings by the local jurisdictions and the public. While safety is a major concern for all users of this facility, adjacent landowners, particularly commercial enterprises, have expressed concern that a restrictive median will adversely affect them by restricting access. Coordination with local officials and public input will be critical to address these areas of concern and reach a mutually beneficial solution. A center turn lane is not acceptable for a roadway with an access classification of 2. In addition to the conflict that a center turn lane would present to the present access classification, if a center turn lane is installed as widening occurs, it is unlikely that a restrictive median would ever be installed, even if the accident rate increased. Historically, the presence of a center turn lane has a tendency to promote additional developments along a route. This development is coupled with increased pressure for access onto the roadway, conflicting traffic movements as a result of the additional
access points, and a reduction in through capacity on that same roadway.

Future Land Use, Zoning, and Development in the Corridor

Development within the corridor is mostly retail and commercial business. No roadway widening is anticipated in the near future due to a shortage of funds. Zoning for future uses is similar to what already exists in the area.

Need for Signalization

The city of Bellingham has plans to install a new signal on SR 539. The location is at the SR-539/Stuart Road intersection. This signal is planned as mitigation for a future retail facility (WallMart) that will be located in the NE quadrant of the intersection. Whatcom county is planning to signalize the SR-S39/Waldron Road intersection. The signal at SR 539/Waldron will serve a future east/west county arterial connector between the I-5/Smith Road I/C and SR 539. Neither of these two intersections has an established time frame for implementation.

The WSDOT has two signalization projects that are included in the 95-97 program. The intersections are, West Badger Road(SR-546)/SR 539 and Main St./SR 539. Another intersection included in the September 30, 1994 Intersection Priority Array, but not in the 95-97 budget, is Wiser Lake. Rd./SR 539 with a signal priority rank of 124 out of 246 (July 95 Intersection Priority Array). All signal priority rankings are subject to reevaluation with all other proposed sites. This report recommends improving future LOS at the intersections of Horton Rd./SR 539 and Hemmi Road/Sit 539 by signalizing them in addition to the intersections listed above.

The close spacing of the signals at Horton, Stuart, and Weldon roads indicate a need to interconnect all three when they are constructed.

Interchanges

No new interchanges are being planned along SR 539. The existing interchange at I-5 will operate at LOS D in 2015 and will not need improvements.

Level of Access Control

The Master Plan for Limited Access, last updated in 1988, recommends the purchase of modified limited access control for the entire route. This RDP, after close examination of the land use and transportation needs within the corridor, recommends that modified limited access be purchased within specific sections of the route only.

The level of access control per RCW 47.50 and WAC 468-52 varies along SR 539. The classification assignments for the various route segments have been previously addressed in this document.

I-5 to Horton Road - The majority of this section exhibits considerable commercial buildout and numerous unrestricted access points. It varies between a seven lane roadway section and a five

lane section. Throughout the length of this portion of SR 539 a two way left turn lane has been constructed. Approximately half of this section of SR 539 is within the city of Bellingham and all of the section is within Bellingham's urban growth boundary. The character of the land use can be described as urban to suburban. Within Bellingham's city limits the City is the permitting authority for the granting of access to the state highway.

As previously stated, the Master Plan for Limited Access recommends the purchase of modified limited access for SR 539. Modified limited access allows most existing access points to remain functional and is normally applied where commercial development potential is high, but most of the adjoining property to the state highway remains undeveloped, or there is a reasonable expectation that the adjoining property will be redeveloped to a more intensive land use. Neither situation is evidenced through this section of the route. Therefore, the purchase of modified limited access through this section of SR 539 is not recommended because it would result in no net benefit.

Horton Road to Ten Mile Road - This section of SR 539 has not yet reached full development buildout but is experiencing some pressure from developers. It is currently comprised of a number of smaller businesses and residences which are likely to see redevelopment. The Whatcom Council of Governments, with the assistance of WSDOT, the County, W.hatcom Transit, and the city of Lynden, is involved in an access management effort which proposes the development of a land use and access plan for SR 539. The access portion of the effort will include such improvements as "backage" roads where appropriate to access businesses from the rear, the elimination of unnecessary access points, and the combination of access points into adjacent properties. Restricting left turn movements in critical locations through the use of a raised median is also an option. The goal is to minimize the number of access points to SR 539 thereby reducing the number of turning movement conflicts with through traffic. Several public meetings have been held to discuss various alternatives with the affected property owners. The next step in the process is to work out an acceptable access plan that will help facilitate the safe movement of traffic as well as allowing adequate access to adjacent properties. The reduction of direct access points from SR 539 to the various properties bordering the highway will greatly enhance both the safety and operational integrity of SR 539.

This document recommends the purchase of modified limited access for this section of the route in conjunction with the access management effort described above. The Northwest Region Project Development Section has been working on a widening project for SR 539 between Horton Road and Ten Mile Road since late 1990. In conjunction with the purchase of right of way for the widening project, it is recommended that the purchase of modified limited access be pursued. Modified limited access will allow the existing properties to directly access the state highway much as they do currently (some changes in access location and number of access points should be negotiated) but will allow the state considerable control over the establishment of new access points to SR 539. There will also be situations where the proposed project will result in the entire "take" of parcels due to the extent of the widening. For these parcels, it is recommended that WSDOT sell the property as surplus only if there is a total restriction on new accesses from the property to the state highway.

Hemmi Road to the Fishtrap Creek Bridge (general vicinity of Lynden's south city limits) - This section of SR 539 is basically rural residential and agricultural in nature with small pockets of commercial development at the Pole Road (SR 544)/SR 539 intersection and at the south end of Wiser Lake. Whatcom County, in their comprehensive plan, will require that this portion of the County remain rural in nature. This document recommends that modified limited access control be purchased along this section of SR 539. By so doing WSDOT can allow the existing access points to remain in place and prohibit any new connections. This will ensure that the capacity of the highway will not be further degraded by the construction of additional accesses to the highway.

Fishtrap Creek Bridge (general vicinity of Lynden's south city limits) to the north city limits of Linden. The city of Lynden is the permitting authority for access to the state highway through the city. This section of SR 539 has been assigned an access classification 4. The city of Lynden has concurred with this classification and will be expected to adhere to the driveway spacing standards set forth for a class 4 highway in WAC 468-52. Both through and turning traffic volumes will need to be evaluated in the future to determine if there is a need for a center turn lane to facilitate left turn movements. Alternate roadway sections are provided in this document for each both scenarios.

The purchase of modified limited access is not recommended for this section of the route for the same reasons it is not recommended for the first section of the route through the Bellingham urban area. The land use along the highway is currently intensive and, although there is still the opportunity to develop some properties to the west of SR 539, by the time WSDOT is able to initiate an action to purchase access control it is likely that the land use will have reached full buildout and no gain will be realized by the action.

Lynden's north city limits to the International Border - This section of the highway is proposed for the purchase of modified limited access control. The majority of this section of SR 539 borders rural agricultural properties and this zoning classification is not likely to be changed. As was the case with the section of highway south of Lynden, the existing access points would be allowed to remain but no further access connections would be permitted.

Right-of-Way Requirements

The current goal is to establish a minimum 30 meters (100 feet) right-of-way width along the highway corridor in order to accommodate future roadway wideningl5. Topographical considerations may require the acquisition of slope easements in a number of areas if desirable design guidelines are to be met. Additional right of way will likely be needed for bus pullouts, stormwater detention and treatment facilities, wetland mitigation sites, and other amenities. Developers of parcels fronting the highway will be asked to contribute right of way as necessary in order to establish a minimum 30 meter (100 feet) right of way as well as any needed right-of—way easements.

Pedestrian and Bicycle Facilities

Crosswalks are to be marked and pedestrian actuation will be provided at all signalized intersections in the urbanized area. Handicapped ramps will be provided at the transition between the shoulder and sidewalk sections as required per current design criteria. SR 539 is approved for bicycle use throughout its entire length. SR 539 is not a designated bicycle touring route as identified in the State Highway System Plan. Therefore, funding for improving shoulder widths to accommodate bicycles must occur as part of a highway improvement project. The minimum Class IV bicycle/shoulder width in a section of highway with curb and gutter is 1.5 meters (5 feet) and in rural areas with open ditch sections the minimum width is 1.2 meters (4 feet).

With the exception of the first section of the route between I-5 and Horton Road, the minimum urban and rural bike lane widths will be met assuming the roadway sections provided in this RDP are utilized when widening projects occur. The first section of the route is already a five to seven lane section with curb, gutter, sidewalks, enclosed drainage, and planting strips on both sides of the roadway. As no roadway widening is anticipated within the 20 year time frame of this document, the portion of the roadway outside the existing curbs would have to be reconstructed to provide the required 1.5 meters of shy distance to the face of the curb. This, in turn, would require the removal and replacement of the existing curb, gutter, sidewalks, enclosed drainage system, and planting strips. It would also result in the loss of parking space for the businesses bordering the highway through this section of the route. It is unrealistic to propose a stand alone project to provide bicycle facilities between I-5 and Horton Road. Because the cost of providing these facilities would be high and the resultant benefit very low, a project of this nature would not prioritize utilizing WSDOT's current benefit/cost prioritization formula (as stipulated in RCW 47.05). Therefore, widening the roadway solely to provide bicycle facilities between I-5 and Horton Road is not recommended.

Bus Pullouts and Park & Ride Lots

The Whatcom County Transit Authority, in conjunction with WSDOT, will build a park & ride lot / transit center in the Lynden vicinity. The initial capacity will be 50 stalls with plans to expand to 150 stalls by the year 2000.

The Whatcom County Transit Authority has listed the locations of possible bus pullouts within the highway corridor. These locations are shown in Table 17 in their respective order of priority

TABLE 18
POSSIBLE BUS PULLOUTS

KP (MP)	INTERSECTION	DIRECTION	SIDE	TYPE OF WORK
KP 13.79 (MP 8.57)	Wiser Lake Road	NB & SB	Far side	NB - 30 meters (100 ft.) north of Cross Rd. Some shoulder widening. SB: needs shoulder workup.
KP 7.24 (MP 4.50)	Axton Road	NB & SB	Far side	Need shoulder widening both directions
KP 12.90 (MP 8.02)	Bartlett Road	NB	Far side	Needs widening 1.2 to 1.5 meters (4 or 5 feet)
KP 12.90 (MP 8.02)	Bartlett Road	SB	Near side	Needs some widening
KP 8.85 (MP 5 50)	Hemmi Road	NB & SB	Far side	NB: 60 meters (200 feet) north of I/S needs shoulder widened SB: at entrance to lumber yard.
KP 11.28 (MP 7.01)	Beard Road	NB	Far side	Widened shoulder
KP 3.99 (MP 2.48)	Kelly Road	NB & SB	Far side	NB: need built up SB: paved shoulder, good stop
KP 9.65 (MP 6.00)	Ten Mile Road	NB & SB	Far side	Consider for future

Curb, Gutter, and Sidewalk

It should be noted that the current design of the Horton Road to Ten Mile Road widening project does not include curb, gutter and sidewalk. However, these amenities should ultimately be provided within this commercial and residential portion of the route. As properties are redeveloped, Whatcom County or the City of Bellingham should condition developers to provide these features as a condition of the redevelopment. When highway widening occurs within the city of Lynden's urban growth boundary, curb, gutter, and sidewalk should be included in the design. To ensure adequate right of way for curb gutter, and sidewalk in this section, Whatcom County or the city of Lynden, depending on the location of future developments, should condition developers to construct curb, gutter, and sidewalk sections in conjunction with the developments if they fall within the areas noted in this section.

Rest Areas

No rest areas are being planned along the SR 539 corridor. The State Highway System Plan service objective (H-32) for rest areas states; "Ensure access to restroom-equipped public facilities every 60 miles [97 kilometers] on the Trunk and Branch Systems outside the urban

area." Because SR 539 is not nearly 97 kilometers (60 miles) in length, it does not qualify for a rest area.

Additional Channelization

Table 19 indicates where future intersection channelization is recommended:

TABLE 19
POTENTIAL CHANNELIZATION

LOCATION	KP (MP)	TYPE	RIGHT TURN	LEFT TURN
Smith Rd.	5.63 (3.50)	4-Way	NB to EB; SB to WB	NB to WB; SB to EB
Axton Rd.	7.22 (4.49)	4-Way	NB to EB; SB to WB	NB to WB; SB to EB
Laurel Rd.	8.04 (5.00)	4-Way	NB to EB; SB to WB	NB to WB; SB to EB
Pole Rd.	12.08 (7.51j	4-Way		NB to WB; SB to EB
Wiser Rd	13.79 (8.57)	4-Way		NB to WB; SB to EB
Kok Rd	16.94 (10.53)	4-Way		NB to WB; SB to EB
Front Rd.	17.38 (10.80)	Eastside T	NB to EB	SB to EB
Main St.	18.15 (11.28)	4-Way		NB to WB; SB to EB
W Badger Rd	20.18 (12.54)	4-Way		NB to WB; SB to EB

These locations were selected from an examination of available data. Judgments were then made regarding future growth patterns and trends. The city of Lynden has recently annexed a tract of land on the west side of SR 539 between Kok Road and W Badger Road. Considerable development is expected in this new portion of the city within the next several years. The city was contacted to determine their future transportation needs with respect to SR 539. The city intends to condition new developments to construct "backage roads", access roads parallel to SR 539, so that the new businesses will not require direct access from SR 539. Although there will still be several businesses which will require direct access from the state highway, the projected traffic numbers may not justify the addition of a center turn lane through the city of Lynden.

Land Developer Participation

Any developments with resultant impacts to a state highway which meet specific impact thresholds is expected to mitigate the impacts their developments would impose on that highway. Mitigation measures may include right-of-way donations, slope easement donations, access management controls and the funding and/or construction of roadway improvements. Depending upon the particular traffic impact, a land developer could be expected to do one or all of the above listed mitigation measures. Specific mitigation measures should be identified after a review and analysis of the development proposed. Development in the SR 539 corridor needs to be closely coordinated with the ability of the highway to safely and efficiently accommodate the additional traffic generated by the proposed development.

Future developments bordering SR 539 Horton to Ten Mile Roads and within the city limits of Lynden would be conditioned by Whatcom county or the city of Lynden, depending on jurisdiction, to construct curb, gutter, and sidewalk as a condition of development.

Public Participation

As part of the public input process for the development of this Route Development Plan (RDP), the WSDOT has made use of a number of different sources and techniques. The following list is a brief history of the different forums that have provided the Department with some opinions, ideas, concerns, and solutions offered by the affected public and their representatives. The following meetings were supplemented by numerous individual communications with the general public and their representatives throughout the development of this RDP

May 5, 1987
General Corridor Planning meeting for SR's S39 & 546 between representatives from Whatcom County, cities of Lynden and Bellingham and WSDOT.

July 7, 1992 Route Development Planning Technical Meeting for SR 539. Participants included representatives from Whatcom County Council of Governments (WCCOG), Whatcom County, Whatcom Transit Authority, the cities of Lynden & Bellingham, United States Customs & Immigration Services, Canada Customs, WSDOT, as well as a representative from Congressman Al Swift's office

June 9, 1993
Access Classification meeting affecting all State Routes in Whatcom County. Participants included Whatcom County, WCCOG, and WSDOT

June 17, 1993 Citizens Advisory Committee (CAC) meeting including dissemination of information on Access Management on State Routes. Participants included Whatcom County, the CAC, and WSDOT.

November 3, 1993
Public Design Hearing on the Horton to Tenmile Road SR 539 Widening Project. Participants included private citizens, Whatcom County, and WSDOT.

March 14, 1995
March 25, 1995
April 25, 1995
This series of meetings was held to develop the Guide Meridian Land Use and Traffic Circulation Planning Study. The participants included private citizens, representatives from Whatcom County, WCCOG, Cities of Lynden & Bellingham, Whatcom Transit Authority, WSDOT, County Commissioner Barbara Brenner, and State Representative Pete Kremen.

SECTION 6: Recommended Project Implementation Plan

This section is to be completed and reviewed separately when time and resources allow. It will consist of a definition of improvements needed in the next six years, based upon this plan.

NOTES:

1. Washington State Department of Transportation (WSDOT), Planning, Research and Public Transportation Division, 1992 Annual Traffic Report.

2. WSDOT, Planning, Research and Public Transportation Division, State Highway Log, 1993, Olympia, WA, pages 351 -354.

3. WSDOT, Roadside Classification Plan - Final Review Draft April 1995

4. WSDOT, Northwest Region Traffic Section.

5. WSDOT, 1993 Bridge List, Olympia, WA, page 284.

6. WSDOT, Bridge Condition Section, Northwest Region, Bridge Deck List, Olympia, WA, March 3, 1993, pages 159- 160.

7. Lynden-Nooksack Valley Subarea, Whatcom County Comprehensive Land Use Plan, June, 1986.

8. Telephone conversation with Rick Gordon of Whatcom County Transit Authority on February24, 1993.

9. Letter from Richard Walsh, Transit Director Whatcom County Transit Authority to Gene Holman, Northwest Region, Traffic Section, dated April 27, 1991.

10. WSDOT, Planning, Research and Public Transportation Division, 1992 Highway Accident Report, Olympia, WA, pages 1-6.

11. WSDOT, Planning, Research and Public Transportation Division, 1992 Highway Accident Report, Olympia, WA, pages 1-6.

12. WSDOT, Planning, Research and Public Transportation Division, Washington State Highway Accident Report, Olympia, WA 1980, 1994, 1992. These reports report accident and fatal rates for different types of state facilities as statewide average. The averages used here are for Principal Arterials, in both urban and rural areas.

13. WSDOT, Northwest Region Traffic Section, 1992 & 1994 High Accident Location Reviews, Seattle, WA.

14. WSDOT, Northwest Region, Location Section, Sunshine Report (Project Status Report), Seattle, WA, May, 1993, pages 206-209. This report is updated every two months.

15. RCW, Volume 5, Title 27 TCW, Public Highways and Transportation, Chapter Width of Right of Way.

16. AASHTO, A Policy on Geometric Design of Highway and Streets, 1990, page 398.

17. WSDOT. Design Manual, Chapter 1020.03(c), Section 1020.03(d). AASHTO, A Policy on Geometric Design of Highways and Streets, 1990, page 1C6, Bicycle Facilities.

18. Letter from Richard Walsh, Transit Director, Whatcom County Transit Authority to Gene Holman, Northwest Region, Traffic Section, dated April 27, 1991.

19. WSDOT, Design Manual. Olympia, WA, Chapter 440, Figure 440-1b, Sheet 1 of 2